UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,041	02/13/2004	Maryellen L. Giger	248939US20	3848

22850 7590 07/07/2009

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
WOLDEMARIAM, AKILILU K

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
07/07/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/777,041	GIGER ET AL.	
	Examiner	Art Unit	
	AKLILU k. WOLDEMARIAM	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-7,10,11,14-17,20,21,24-27 and 30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-7,10,11,14-17,20,21,24-27 and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/14/2008, 05/10/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/10/2009 has been entered.

Response to Arguments

2. Applicant's arguments filed on 03/10/2009 have been respectfully considered, but they are not persuasive. Applicant argued that about references (*Huo et al., "Huo" (U.S. Patent number 6, 282,305 B1) in view of Rogers et al., "Rogers" (U.S. Patent number 5, 671, 294))* do not disclose " extracting from a selected region of interest in the mammogram, plural surface areas or volumes calculated at corresponding plural scales associated with a texture of a parenchyma of the breast and *applying said plural surface areas or volumes directly as inputs to at least one of a linear discriminant classifier and an artificial neural network classifier."*

Examiner disagreed with applicant's argument because Huo discloses extracting from a selected region of interest in the mammogram, plural surface areas or volumes calculated at corresponding plural scales associated with a texture of a parenchyma of the breast *(see fig.1 selected area and correlation and column 9, lines 35-59 and column 13, lines 36-39 features were extracted from each of the selected*

ROIs to quantify the mammographic parenchymal patterns and surface area referred to ROIs and calculation referred to correlation) and

applying said plural surface areas or volumes directly as inputs to at least one of a linear discriminant classifier *(see column 9, lines 48- 59, In performing the comparison of extracted features with the model, at least one of linear discriminate analysis, linear regression analysis and logistic regression analysis is performed on plural extracted features)* and an artificial neural network classifier *(see column 9, lines 48- 59, In performing the comparison of extracted features with the model, at least one of linear discriminate analysis, linear regression analysis and logistic regression analysis is performed on plural extracted features). Examiner disagreed with applicant's argument for above similar or identical reasons.*

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 1, lines, claim phrase, "*volumes directly as inputs*" does not have enablement as described in original specification, [see paragraph [0100] and

[0108]]. In claim 11, lines 7-8, claim phrase, "volumes *are directly applied as inputs"* and also does not have enablement as described in original specification, [see paragraph [0100] and [0108]]. It is a new matter issue. Examiner suggested claim amendment to overcome 112 first paragraph new matter rejection.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims *1, 4-7 and 10* are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. The Federal Circuit[1], relying upon Supreme Court precedent[2], has indicated that a statutory "process" under 35 U.S.C. 101 must (1) be tied to a particular machine or apparatus, or (2) transform a particular article to a different state or thing. This is referred to as the "machine or transformation test", whereby the recitation of a particular machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility (See *Benson*, 409 U.S. at 71-72), and the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity (See *Flook*, 437 U.S. at 590"). While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform an article nor are positively tied to a particular

---

[1] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

[2] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

machine that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. *Machine test Analysis , in claim 1 in the steps " extracting", "applying", and "generating" do not have any "computer " or " processor" or " device" to carry out all the steps of in claim 1. It is clear that claim 1 is not tied to a particular machine and claim does not fail to pass the machine test analysis. And also claim 1 does not have (a) physical or chemical transformation of a physical object, (b) no modification to data or signal; (c) claim 1 does not have either displaying or printing any where in claim ; (d) Modification and /or transformation not meaningful or insignificant. Therefore claim 1 requires computers or processors or device after the word "comprising".*

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

7. Claims 11, 14-17 and 20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 11 defines a "system". However, while the preamble defines a "system", which would typically be indicative of an "apparatus", the body of the claim lacks definite structure indicative of a physical apparatus. Furthermore, the specification indicates that the invention may be embodied as pure software [see paragraph [0117] software module for digitizing and storing images obtained from film or an image acquisition device. Alternatively, the present invention can also be implemented to process digital data derived from images obtained by other means, such as a picture archive communication system (PACS)].

Therefore, the claim as a whole appears to be nothing more than a "system" of software elements, thus defining functional descriptive material per se.

Functional descriptive material may be statutory if it resides on a "computer-readable medium or computer-readable memory". The claim(s) indicated above lack structure, and do not define a computer readable medium and are thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests:

1. Amending the claim(s) to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory; or

2. Adding structure to the body of the claim that would clearly define a statutory apparatus.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. *Claims 1, 4-7, 10-11, 13-17, 20-21 and 23- 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huo et al., "Huo" (U.S. Patent number 6, 282,305 B1) in view of Rogers et al., "Rogers" (U.S. Patent number 5, 671, 294).*

Regarding claim 1, *Huo discloses* a method for a computerized analysis of a mammogram in digital form of a breast of a patient *(see column 9, line 6-column 10, line 8, the present invention thus involves the development of a computerized method to automatically extract features that characterized mammographic parenchymal patterns and relate to breast cancer risk would potentially benefit women seeking information regarding their individual breast cancer risk),* comprising:

extracting from a selected region of interest in the mammogram plural surface areas or volumes calculated corresponding plural scales associated with a texture of a parenchyma of the breast *(see column 9, fine 60-column 10, line 8, the present invention thus involves the development of a computerized method to automatically extract features that characterized mammographic parenchymal patterns and relate to breast cancer risk would potentially benefit women seeking information regarding their individual breast cancer risk);*

applying said plural surface areas or volumes directly as inputs to at least one of a linear discriminant classifier and an artificial neural network classifier *(see column 9, lines 48- 59, In performing the comparison of extracted features with the model, at least one of linear discriminate analysis, linear regression analysis and logistic regression analysis is performed on plural extracted features)* and

an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer);* and

generating a risk marker indicative of a breast disease risk for said patient based on an output of the at least one of a linear discriminant classifier and an artificial neural network classifier *(see column 9, lines 30-59, the extracted features are compared with a predetermined model based on gene carrier information and clinical information, and a risk classification index is output as a result of the comparison)* and

an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer).*

Hugo does not disclose at multiple scales associated with a texture of a parenchyma of the breast.

However, Rogers discloses at multiple scales associated with a texture of a parenchyma of the breast *(see column 5, line 59-column 6, line 25, and this results in a set of volume approximation at different scales which allow us to obtain estimates of the surface area as a function of scale).*

It would have been obvious to ordinary skill in the art at the time when the invention was made to use Rogers's extracting from the mammogram plural fractal-based features at multiple scales associated with a texture of a parenchyma of the breast in Huo's a method for a computerized analysis of a mammogram in digital form of a breast of a patient because it will allow to provide an image analysis system that will provide a cost efficient means for providing mammographic screening programs to large segments of the pollution, *[Rogers, column 3, lines 3-6].*

Huo discloses extracting plural fractal based features.

Huo does not disclose multiple scales surface areas or volumes at multiple pixel sizes as the plural fractal-based features.

However, Rogers discloses regarding claim 3, the method according to Claim 1, wherein the extracting step comprises:

extracting plural fractal based features at multiple scales surface areas or volumes at multiple pixel sizes as the plural fractal-based features *(see column 5, line 59-column 6, line 25, and these results in a set of volume approximation at different scales which allow us to obtain estimates of the surface area as a function of scale).*

Regarding claim 4, *Hugo discloses* the method according to Claim 1, wherein the extracting step comprises:

extracting plural fractal-based features from an area of a region of interest of the mammogram based on a box-counting method *(see column 11, lines 3-16, the computerized method for the assessment of breast cancer risk based on the analysis of mammography parenchymal patterns and box-counting method is well known in an ordinary skill in the art).*

Regarding claim 5, *Rogers discloses* the method according to Claim 1, wherein the extracting step comprises:

extracting the plural volumes from a volume of the region of interest of the mammogram based on a general Minkowski model *(see column 5, line 59-column 6, line 25, this results in a set of volume approximation at different scales which allow us to*

obtain estimates of the surface area as a function of scale and general Minkowski model referred to it is well known to ordinary skill in the art).

Regarding claim 6, *Huo discloses* the method according to Claim 1, wherein the applying step comprises:

applying the features to a linear discriminant analysis classifier *(see column 9, lines 48-59, in performing the comparison of extracted features with the model, at one of linear discriminate analysis, linear regression analysis and logistic regression analysis is performed on plural extracted features).*

Regarding Claim 7, *Huo discloses* the method according to Claim 1, wherein the applying step comprises: applying the features to an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer).*

Regarding Claim 10, *Huo discloses* the method according to Claim 1, wherein the extracting step comprises:

extracting from the mammogram determining a multi-fractal characteristic associated with the texture of the parenchyma of the breast *(see column 9, line 60-column 10, line 8, extract features that characterize mammographic parenchymal patterns and relate to breast cancer risk would potentially benefit women seeking information regarding their individual breast cancer risk).*

Regarding claim 11, *Huo discloses* a system for computerized analysis of a mammogram in digital form of a breast of a patient (*see column 9, line 60-column 10, line 8, the present invention thus involves the development of a computerized method to automatically extract features that characterized mammographic parenchymal patterns and relate to breast cancer risk would potentially benefit women seeking information regarding their individual breast cancer risk),* comprising:

a feature extraction mechanism that extracts from a selected region of interest in the mammogram, plural surface areas or volumes calculated at corresponding plural scales associated with a texture of a parenchyma of the breast *(see column 9, line 60-column 10, line 8, the present invention thus involves the development of a computerized method to automatically extract features that characterized mammographic parenchymal patterns and relate to breast cancer risk would potentially benefit women seeking information regarding their individual breast cancer risk);*

a classifier mechanism including at least one of a linear discriminant classifier (*see column 9, lines 48-59, in performing the comparison of extracted features with the model at least one of linear discriminate analysis, linear regression analysis and logistic regression analysis is performed on plural extracted features*) and

an artificial neural network to which the plural surface areas or volumes are directly applied as inputs *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer);* and

a risk marker generator that generates a risk marker indicative of a breast disease risk for said patient based on an output of the classifier mechanism *(see column 9, lines 30-59, the extracted features are compared with a predetermined model based on gene carrier information and clinical information, and a risk classification index is output as a result of the comparison)* and

an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer).*

Huo does not disclose at multiple scales associated with a texture of a parenchyma of the breast.

However, Rogers discloses at multiple scales associated with a texture of a parenchyma of the breast *(see column 5, line 59-column 6, line 25, this results in a set of volume approximation at different scales which allow us to obtain estimates of the surface area as a function of scale).*

It would have been obvious to ordinary skill in the art at the time when the invention was made to use Rogers's at multiple scales associated with a texture of a parenchyma of the breast in Huo's a method for a computerized analysis of a mammogram in digital form of a breast of a patient because it will allow to provide an image analysis system that will provide a cost efficient means for providing mammographic screening programs to large segments of the pollution, [*Rogers, column 3, lines 3-6].*

Huo discloses the feature extraction mechanism extracts plural fractal based features.

Huo does not disclose at multiple scales surface areas or volumes at multiple pixel sizes as the plural fractal-based features.

However, Rogers discloses regarding claim 13, the system according to Claim 11, wherein the feature extraction mechanism extracts plural fractal based features at multiple scales surface areas or volumes at multiple pixel sizes as the plural fractal-based features *(see column 5, line 59-column 6, line 25, this results in a set of volume approximation at different scales which allow us to obtain estimates of the surface area as a function of scale).*

Regarding claim 14, *Huo discloses* the system according to Claim 11, wherein the feature extraction mechanism extracts the plural surface areas from an area of the region of interest of the mammogram based on a box-counting method *(see column 11, lines 3-16, the computerized method for the assessment of breast cancer risk based on the analysis of mammographic parenchymal patterns and box-counting method is well known).*

Regarding claim 15, *Rogers discloses* the system according to Claim 11, wherein the feature extraction mechanism extracts the plural fractal-based features from a volume of a region of interest of the mammogram based on a general Minkowski model *(see column 5, line 59-column 6, line 25, this results in a set of volume approximation at different scales which allow us to obtain estimates of the surface area as a function of scale and what is a general Minkowski modes please clarify it).*

Regarding Claim 16, *Huo discloses* the system according to Claim 11, wherein the classifier mechanism comprises a linear discriminant analysis classifier *(see column 9, lines 48-59, in performing the comparison of extracted features with the model at least one of linear discriminate analysis, linear regression analysis and logistic regression analysis is performed on plural extracted features).*

Regarding Claim 17, *Huo discloses* the system according to Claim 11, wherein the classifier mechanism comprises an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer).*

Regarding Claim 20, *Huo discloses* the system according to Claim 11, wherein the feature extraction mechanism extracts from the mammogram a multi-fractal characteristic associated with the texture of the parenchyrna of the breast *(see column 9, line 60-column 10, line 8, extract features that characterize mammographic parenchymal patterns and relate to breast cancer risk would potentially benefit women seeking information regarding their individual breast cancer risk).*

Regarding claim 21, *Huo discloses* a computer readable medium storing instructions for execution on a computer system, which when executed by the computer system, causes the computer system to perform a method for a computerized analysis of a mammogram in digital form of a breast of a patient *(see column 9, line 60-column 10, line 8, the present invention thus involves the development of a computerized method to automatically extract features that characterized mammographic*

parenchymal patterns and relate to breast cancer risk would potentially benefit women seeking information regarding their individual breast cancer risk), comprising the steps of:

extracting from a selected region of interest in the mammogram plural surface area or volumes calculated corresponding plural scales associated with a texture of a parenchyma of the breast *(see column 9, line 60-column 10, line 8, the present invention thus involves the development of a computerized method to automatically extract features that characterized mammographic parenchymal patterns and relate to breast cancer risk would potentially benefit women seeking information regarding their individual breast cancer risk),*

applying said plural surface areas or volumes directly as inputs to at least one of a linear discriminant classifier *(see column 9, lines 48-59, In performing the comparison of extracted features with the model at least one of linear discriminate analysis, linear regression analysis and logistic regression analysis is performed on plural extracted features)* and

an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer);* and

generating a risk marker indicative of a breast disease risk for said patient based on an output of the at least one of a linear discriminant classifier *(see column 9, lines 30-59, the extracted features are compared with a predetermined model based on gene*

carrier information and clinical information, and a risk classification index is output as a result of the comparison) and

an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer)* and

an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer).*

Huo does not disclose at multiple scales associated with a texture of a parenchyma of the breast.

However Rogers discloses at multiple scales associated with a texture of a parenchyma of the breast *(see column 5, line 59-column 6, line 25, this results in a set of volume approximation at different scales which allow us to obtain estimates of the surface area as a function of scale).*

It would have been obvious to ordinary skill in the art at the time when the invention was made to use Rogers's at multiple scales associated with a texture of a parenchyma of the breast in Huo's a method for a computerized analysis of a mammogram in digital form of a breast of a patient because it will allow to provide an image analysis system that will provide a cost efficient means for providing mammographic screening programs to large segments of the pollution, *[Rogers, column 3, lines 3-6].*

Regarding Claim 24, *Huo discloses* the computer readable medium according to Claim 21, wherein the extracting step comprises:

extracting plural surface areas from an area of the region of interest of the mammogram based on a box-counting method *(see column 11, fines 3-16, the computerized method for the assessment of breast cancer risk based on the analysis of mammographic parenchymal patterns and box-counting method is well known).*

Regarding claim 25, *Rogers discloses* the computer readable medium according to Claim 21, wherein the extracting step comprises:

extracting the plural volumes from a volume of the region of interest of the mammogram based on a general Minkowski model *(see column 5, line 59-column 6, line 25, this results in a set of volume approximation at different scales which allow us to obtain estimates of the surface area as a function of scale and general Minkowski model referred to it is well known to ordinary skill in the art).*

Regarding Claim 26, *Huo discloses* the computer readable medium according to Claim 21, wherein the applying step comprises:

applying the features to a linear discriminant analysis classifier *(see column 9, lines 48-59, in performing the comparison of extracted features with the model, at least one of linear discriminate analysis, linear regression analysis and logistic regression analysis is performed on plural extracted feature).*

Regarding Claim 27, *Huo discloses* the computer readable medium according to Claim 21, wherein the applying step comprises:

applying the features to an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer).*

Regarding Claim 27, *Huo discloses* the computer readable medium according to Claim 21, wherein the applying step comprises:

applying the features to an artificial neural network classifier *(see column 9, lines 48-59, extracted features are merged into a measure related to the risk of acquiring cancer by applying the extracted features as inputs to a trained artificial neural network outputting a risk classification index indicative of risk of acquiring cancer).*

Regarding Claim 30, *Huo discloses* the computer readable medium according to Claim 21, wherein the extracting step comprises:

extracting from the mammogram a multi-fractal characteristic associated with the texture of the parenchyma of the breast (*see column 9, line 60-column 10, line 8, extract features that characterize mammographic parenchymal patterns and relate to breast cancer risk would potentially benefit women seeking information regarding their individual breast cancer risk).*

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKLILU k. WOLDEMARIAM whose telephone number is (571)270-3247. The examiner can normally be reached on Monday-Thursday 6:30 a.m-5:00 p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brian Le
Primary Examiner
Art Unit 2624

/A. k. W./
Examiner, Art Unit 2624
06/11/2009
/Brian Q Le/
Primary Examiner, Art Unit 2624